



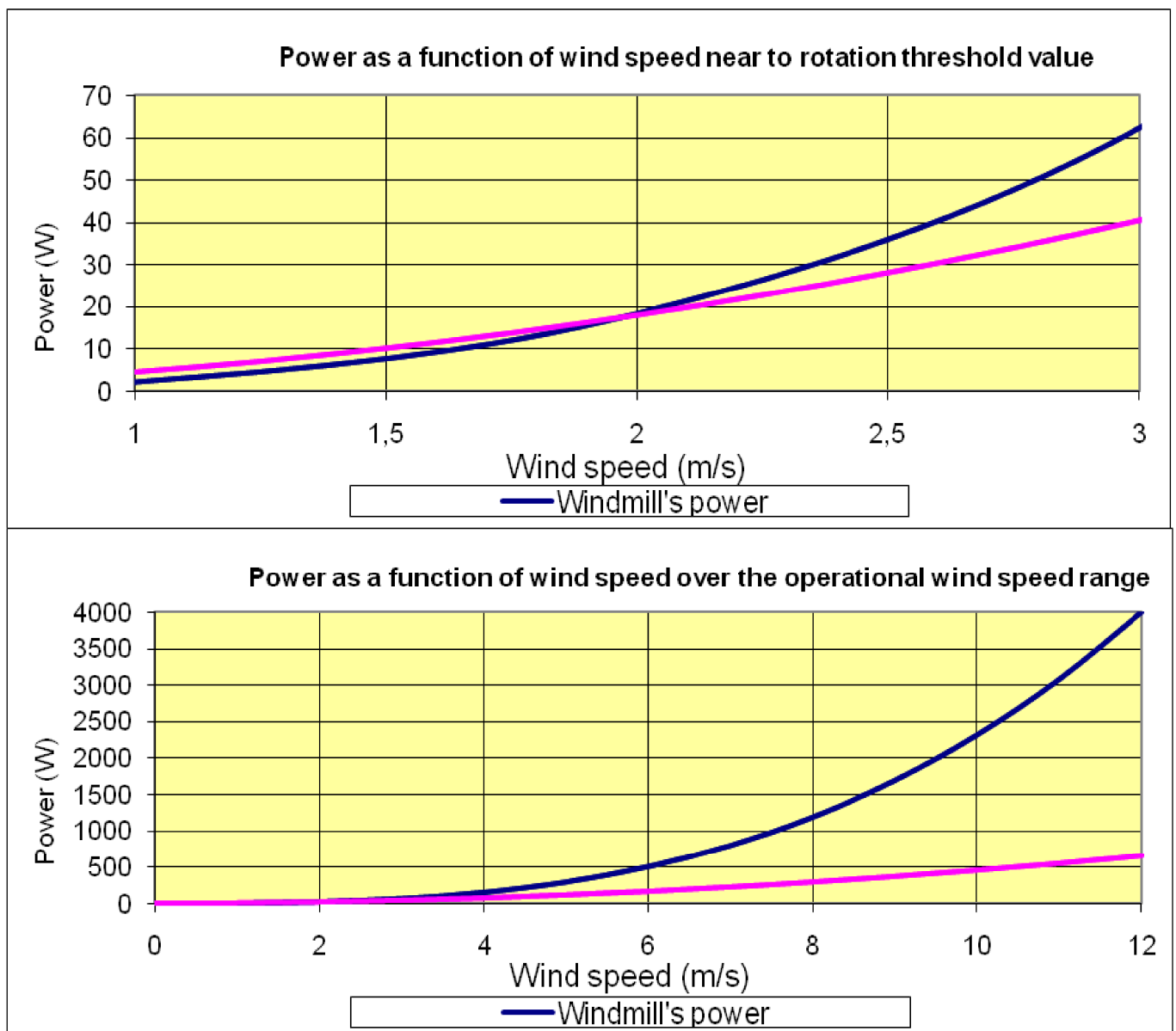
# *FinnProp*



Windmill power controllers

**GENERAL INFORMATION**

Depending on wind speed, the efficiency with which a windmill can harness the power of the wind can vary from near nil to 100% of specified values. When the power demand of an appliance such as a battery charging system or water heater exceeds the power output of a windmill's generator, the propeller of a windmill without a power controller can actually stop spinning. Conversely, when windspeeds are moderate or high, as much as 80% or more of the available wind power can be lost. In systems where power is fed directly (i.e. without a controller) to a heating element, it has been found necessary to increase the resistance of the heating element to a level that corresponds to the windmill's power output at a wind speed of 2m/s, with a resulting loss of efficiency as wind speed increases (see graphs below).



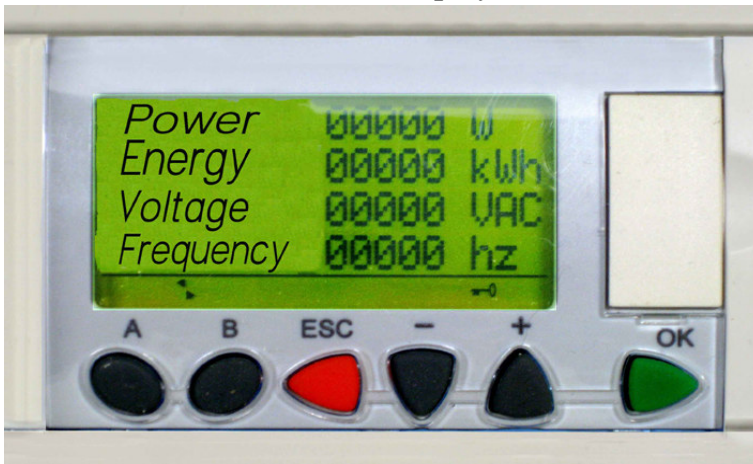
**FinnProp® windmill power controllers are designed to maximize windmill efficiency and allow propellers to rotate whenever the wind is blowing.**

## TWO FULLY SUPPORTED CONTROLLER LINES

Both controller lines are supported with a variety of appliances, including resistive heating elements, battery-charging systems and circuitry that produces sell-back electricity for local power grids. Appliances are connected directly to the power controller, where its *dynamic prioritization* feature can maximize efficiency.

### ECONO(EC)

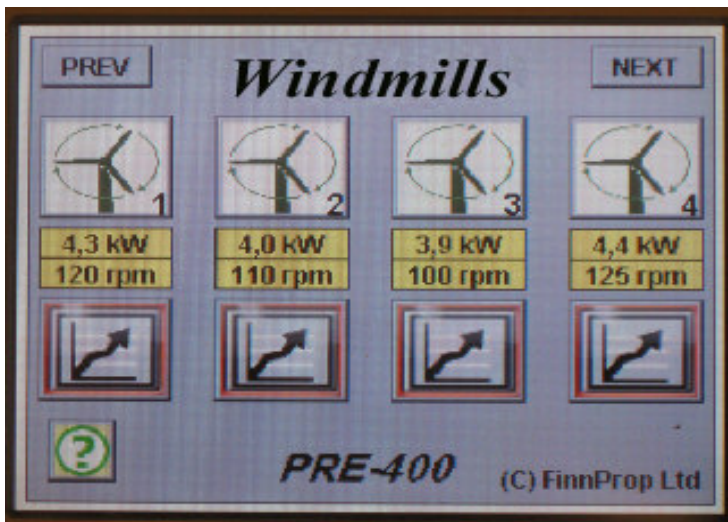
Economical and suitable for both primary household and leisure home use. Push-button controls and a standard numeric text display.



Picture 1. ECONO controller panel

### PREMIUM (PRE)

The PRE product line offers a more sophisticated user interface. The graphic touchscreen display enables single point total system monitoring with fast access to dynamic prioritization (see below) settings and appliance monitors (e.g., power level monitors of individual appliances displayed as graphs or bar charts). Parametrization and monitoring of an entire wind farm is available at the touch of a finger. The PRE series controller can be connected to a LAN or the internet for remote control.



Picture II. PREMIUM controller panel

## **FEATURES**

### **SMART power regulation.**

The amount of power that can be harnessed from the wind is dependent on wind speed. Our power controllers utilize an algorithm specially developed for windmill applications. Propeller load is optimal over the entire range of operational wind speed to ensure maximum efficiency.

### **Metering**

Controllers display power levels in kWh and the meters can be reset.

### **Dynamic prioritization**

The Dynamic Prioritization feature allows programmable distribution of power to appliances. This can be very useful in a leisure home, for example, where the ambient temperature may fall below zero and maintaining full battery charge is considered less important.

### **SMS alerts**

The controller can send selected information (e.g. meter readings or malfunction warnings) to a user's mobile telephone via a GSM network.

## PRACTICAL APPLICATIONS

### Heating

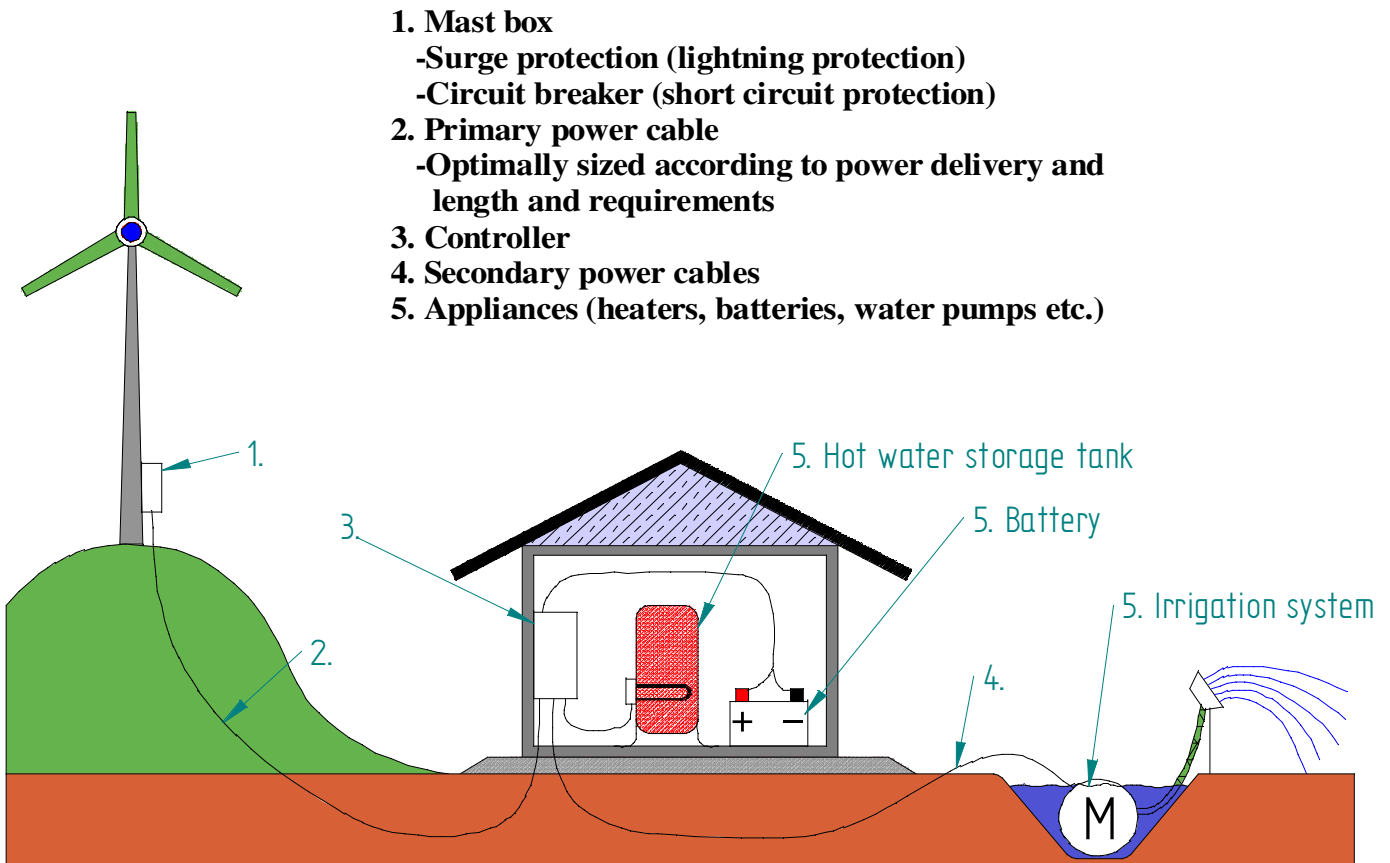
Direct resistive heating is the most efficient way to use wind power. The controller channels power directly to a resistive heating device. Since battery charging is unnecessary, efficiency losses can be reduced significantly, in some cases up to 80%. The resistive heating element can be placed in a water tank or a stove, or the windmill's electricity can be used to power a heating fan directly.

### Battery charging

Ideal when the system is being used independent of a power grid, e.g. for lighting in leisure homes. All or part of the windmill's power can be used to charge batteries. Several voltage options are available. The charging system can also maintain batteries at full charge using the above mentioned algorithm. The windmill's propeller will rotate even when battery load is high, and both battery voltage and charging rates can be readily monitored.

### SELL-BACK electricity

In high wind areas the selling of surplus power to the local power grid is a viable option  
**We also offer made-to-order systems.**



1. Mast box
  - Surge protection (lightning protection)
  - Circuit breaker (short circuit protection)
2. Primary power cable
  - Optimally sized according to power delivery and length and requirements
3. Controller
4. Secondary power cables
5. Appliances (heaters, batteries, water pumps etc.)

### A total wind power package